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CRISIS WARNING AND MANAGEMENT

Davis B. Bobrow

Maryland University

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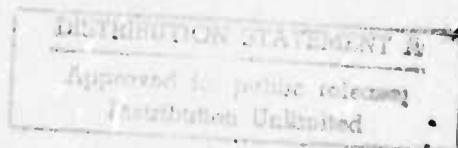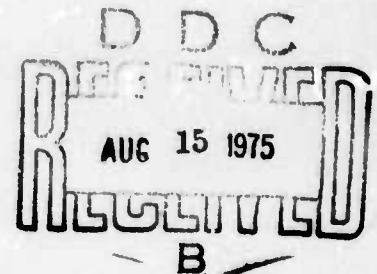Advanced Research Projects Agency

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CRISIS WARNING AND MANAGEMENT

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Principal Investigator	Dr. Davis B. Bobrow (301) 454-3547
Scientific Officer	Director Organizational Effectiveness Research Programs Psychological Sciences Division Office of Naval Research Department of the Navy 800 N. Quincy Street Arlington, Virginia 22217

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Substantial progress has been made in the area of crisis warning and management and is described dealing with: 1) Program Perspective, 2) Technical Coordination and Integration Tasks, 3) Data Set Inventory, 4) Intensive Events Data - 1963-1965, and 5) Chinese Perceptions of Political Symbols.

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This memorandum is intended to serve as a semi-annual status report on work performed at the University of Maryland on Crisis Warning and Management. The contract began on February 1, 1975. It calls for two types of activities: research on second order crises, and advisory services on the planning and coordination of the ARPA crisis management R & D program.

With regard to the advisory tasks, a program perspective document has been prepared for the ARPA Human Resources Office and is attached as Appendix A. Technical coordination and integration tasks to be met through the life of the program have also been identified and transmitted to the Human Resources Office (Appendix B).

With regard to the research tasks, activity has concentrated on the development of a data base to pursue our methodological concerns. The initial case selected has been the People's Republic of China which conforms well to the case selection criteria stated in the initial proposal. We have reviewed data sets developed by other investigators and the results of the review to date are summarized in Appendix C. We have secured the services of S. Chan and a uniquely appropriate data set he has developed which is described in Appendix D. And we have secured the services of J. Kringen and a uniquely pertinent set of semantic information on political symbols described in Appendix E. Orientation of these materials to our purposes is now underway. In addition, qualitative content analysis is proceeding using for initial sampling guidance some event lists published by Chinese analysts.

In sum, initial efforts have substantially discharged the technical advisory tasks of a conceptual nature and the "set-up" research tasks called for in the initial contract to allow analysis to move ahead efficiently.

PROGRAM PERSPECTIVE

There appears to be a general consensus as to the configuration of the world
in 1985,[1] at least for crisis management purposes. It is expected that the
policentric world will be facing further fragmentation. Old quarrels over
territory, seas and straits, and control of populations will be augmented by
frictions arising from economic warfare and the steadily rising likelihood of
military action. Many crises will occur in land and sea areas distant from
the United States.

Military policy and guidance seem centered along the following lines: general
purpose forces must exist with rapid reaction times, high mobility, and aus-
tere total force levels; these forces must be prepared to operate from unpre-
pared areas where logistic support is not established; the survivability of
these forces must be enhanced by their mobility capabilities and by tactics
of limited concentration; they must be provided with highly reliable and so-
phisticated communications, command, and control; and they must be prepared
to cooperate promptly and efficiently with allies and to pause and end conflict
in response to authoritative guidance.

Given these general guidelines, a research program on crisis management should
be designed to fulfill a broad set of objectives and to prepare DoD policy-
makers for response to a number of new crisis situations. The following is
an attempt to delineate U.S. defense crisis management problems in the post-
1980 world to generate the requirements for meeting future crisis situations
and to suggest social science products which would help meet the requirements.

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[1] See, for example, "Defense Policy Planning Guidelines," The Joint Long-
Range Strategic Study, 1974 and Galtung, The True World, 1975, Council on
World Order, N.Y.

I. U.S. DEFENSE CRISIS MANAGEMENT PROBLEMS FOR THE 1980's

A. U.S. Posture

- Scarce U.S. military/economic resources and import dependence
- Contingent, flexible (non-binding) U.S. commitments
- Relatively little foreign basing
- NCA stress on bargaining and readily terminated responses
- Congressional scrutiny in a close to real time mode

B. National Security Environment

- Numerous nuclear armed countries
- Numerous "cause" groups capable of terror
- Few allies for all seasons
- Relative technological equality among major nations

C. Crisis Characteristics

- Diverse situations in terms of geography, major actors, and significant issues
- High incidence of ad hoc coalitions which do not necessarily reflect existing alignments
- Fragile, limited joint interests
- Relatively transportable situations which are likely to display contagious epidemics of crises across regions

II. GENERAL U.S. DEFENSE CRISIS MANAGEMENT REQUIREMENTS

Now that the basic problems envisioned for the 1980's have been delineated, it is possible to derive general requirements for the defense community to meet this class of situations.

- Capability for early anticipation and rapid discrimination of crisis characteristics

- User-oriented data to improve the knowledge bases relevant to avoiding or managing crises

- Multi-situation planning with ease of rapid reallocation of forces

- Communication, command, and control which allows for anticipatory, militarily low-cost actions; enables coordination among military responses and between military and non-military responses; makes termination following "new" foreign commitments credible; supports the National Command Authority in domestic consultation; problem definition

- Capability to adopt a unilateral, bilateral, or multi-lateral mode of operation

Sections I and II stated the problems to be found in the 1980's and the requirements they place upon defense crisis management. The next two sections present what is currently being accomplished and what additional contributions social science research can make.

III. CURRENT U.S. DEFENSE CRISIS MANAGEMENT CAPABILITIES AND ACTIVITIES

A. Current DoD Capabilities

- Current capabilities to analyze past crises for lessons learned exist in Joint Chiefs of Staff, Operations (J3), Defense Intelligence Agency (DIA), Deputy Director for Intelligence (DI), Defense Science Advisory Board (DSAB), and United States Intelligence Board (USIB). Review capability varies among agencies but consists primarily of attention to communications, logistics, and personnel mistakes rather than having to consider needs for updating capabilities to analyze or interpret events.

- Exercises, Plans, and Analysis of the Joint Chiefs of Staff, Operations (J3-EP&A) has the capability to run exercises and analyze the results. To date they do not store the same information on real crises nor do they compare real crisis behavior with exercise behavior.

- Emergency Operating Procedures and Joint Administrative
  Instructions 3.001 and 3.002 lay out the current theory
  for dealing with crises but both are recognized as being
  in need of strong updating to handle less than nuclear
  alerts and control or tactical nuclear confrontations.

- Indications Monitoring (Warning) has gone operational
  with ARPA-sponsored routines for analyzing military indi-
  cators. To date no ability is available to attribute
  intent to enemy forces other than by equating it to capa-
  bility.

B. Current DoD Activities

- The Defense Intelligence Agency (DIA) and Assistant Sec-
  retary for Defense Intelligence (ASDI) are supporting
  research on military indicators in early warning.

- Defense Telecommunications and Command and Control Sys-
  tems (DTACCS) are supporting research on information
  requirements for World Wide Military Command and Con-
  trol Systems (WWMCCS).

- The Navy has supported projects looking at shipboard
  personnel problems on crisis command and control (C^2)
  alerts.

- Rome Air Force Base is involved in supporting analyst
  stations for use in indications monitoring.

- ARPA has supported initial studies in program develop-
  ment in crisis management.

- Services are supporting a number of intra-service research
  projects on command and control (C^2) capability.

Despite current efforts more work is obviously necessary if the defense
community is to heed the challenges of the 1980's. The social science
community has made strides in the last several years to the point where
research can make a real contribution in a number of areas. The next
section delineates major potential contributions.

IV. WHAT CONTRIBUTIONS CAN SOCIAL SCIENCE MAKE?

Considerable ARPA support as well as other DoD support of social science
research in the past has developed a base or core of knowledge upon which

to build a viable crisis management program. Key capabilities exist today
in the following areas:

- Anticipation of context, impact, and events -- for planning
  (force structure; command, control, and communications (C^3);
  procurement; and deployment decisions)

- Organizational effectiveness/procedures

- Training/preparation technology programs

- Information handling -- for collection, transmission,
  analysis

These general categories can be broken out and addressed in detail.

A. Anticipation of Context, Impact, and Events

Interactive analytical tools that permit the examination of various kinds
of human behavior within certain imposed constraints have long been
employed in social science analysis. These simulations have been used
to study a wide variety of social problems including those as disparate
as behavior in urban settings and the implications of different kinds of
weapons development for the stability of the international system.

Following work on the analysis of complex social systems, computer simu-
lation has been widely employed to develop a replica of an existing or
desired system so that analyses can be undertaken to determine the future
course of the system should all things remain equal or to determine the
impact of changes in selected characteristics of the system should they
be likely to occur or be policy-desirable. Capability exists today for:

- Analysis of human information processing to improve
  our understanding of the nature of the communication
  process so that less information is lost in times of
  crisis.

- Analysis of the interaction between developed and
  underdeveloped societies over the distribution of
  basic commodities (for example, petroleum, food-
  stuffs) so that the impact of shifts in this rela-
  tionship can be learned.

- Analysis of alternative futures -- for example, the analysis of the implications of alternative patterns to the development of the international system so that these implications can be entered into the preparedness statements of the armed forces.

B. Organizational Effectiveness/Procedures

Research on the nature of the complex organizations has produced useful information on organizational dynamics. The prospects for helping members of an organization understand their environment better and thus perform more effectively have been enhanced significantly. Research on complex organizations, including analysis of group characteristics, leadership, and decision-making can be of considerable benefit in a number of areas:

- Analysis of the determinants of leadership in complex organizations and the impact of leadership on organizational effectiveness.

- Analysis of decision-making in small task groups -- for example, those found in the armed forces.

- Analysis of decision-making and organizational behavior in national security affairs.

- Analysis of the distribution of information and authority in large organizations.

C. Training/Preparation Technology Programs

The Department of Defense has long supported instructional exercises and simulations, dating back to its early support for "war games." Today these man-machine simulations are actively used for leadership training and analysis (for example, the programs at the various war colleges) and for the analysis of various political and economic environments in which weapons and force configurations have to operate (for example, the analyses at

the Studies, Analysis, and Gaming Agency. Several studies of potential contribution remain:

- Analysis of the impact of the introduction of nuclear weapons beyond the major actors in the international system (that is, the Nth country problem).

- Analysis of the nature of information and exchange in crisis versus non-crisis periods.

- Analysis of information processing and computer-assisted instruction to improve the training of armed forces personnel.

D. Information Handling

Considerable effort has been expended to develop means to monitor social, economic, and military activity using "system-generated" data. Within the government, the leading indicators analysis used in economic analysis is typical of this effort. Similar activities have been undertaken in DoD to monitor military conditions generally (for example, RCA military capabilities monitoring) or specific conflicts such as Vietnam. Potential exists for:

- Large-scale event data analysis to code and analyze exchanges between nation states as a first step in developing monitoring systems that will signal activities of interest to policy-makers.

- Analysis of key variables that can be monitored to stand in for other central characteristics.

- Analysis of signals between major actors to indicate modification or continuation of existing positions (for example, U.S.-North Vietnam).

- Analysis of exchange patterns in specific areas of the world that will signal modifications of conditions that may call for subsequent U.S. responses (for example, in the Middle East).

Systematic analyses of the content of exchanges between countries or statements by leaders have been undertaken to determine the intent of the participants. Beginning initially with propaganda analyses, these

projects now focus on a wide variety of analyses of statements by world leaders. ARPA should find the following content analytic studies useful:

- Analysis of Soviet perceptions and goals. These studies may help the orientations of Soviet leaders toward the world. With this information U.S. decision-makers can more accurately assess Soviet intentions.

- Analysis of the perceptions of adversaries in conflicts in which the United States is not a direct participant (for example, the Middle East), but in which it might presumably be called upon to act.

V. RESEARCH PRODUCTS TO MEET DEFENSE CRISIS MANAGEMENT REQUIREMENTS

The completion of a multi-year program should include a number of products from each of the core areas of research capabilities. They are enumerated in this section. But before discussing products, several assumptions in the form of caveats need to be mentioned.

Each requirement calls for additional organizational training, new kinds of information, and anticipation of products for the user community. Research leverage is _not_ always the same. For example, our ability to deal with more slowly changing environments is better than predicting highly fluid situations. ARPA cannot and should not do everything. What is important is that it monitor what is being done elsewhere in the community and undertake those projects that integrate the whole package.

A. Products

- Updated ability in forecasting for crisis planning

- Capability to estimate intent in indications monitoring; prototype system for early warning analysis

- Increased organizational capability to manage crises

- Updated training/exercise routines for newly developed emergency operating procedures

- Introduction of other advanced data processing procedures for information handling

B. Anticipation of Context, Impact, and Events

- Delineate the characteristics of crises likely to exist in the 1980's

- Project implications for U.S. objectives of particular crises

- Develop response options for estimated crisis situations, and methods to predict their effects

- Identify constraints on effective response to an emerging crisis or threat, for example, NATO mobilization

- Develop political indicators for application in indications monitoring

- Develop pattern recognition routines for identifying and interpreting sequences of events

C. Organizational Effectiveness/Procedures

- Determine effects of altering the distribution of responsibility and information in dealing with crises

- Develop standardized methods for evaluating organization arrangements to improve the management of crises, for example, update emergency operating procedures

- Identify the effect crises have on the analysis of policy alternatives and the identification of threat

- Identify how decision-making groups should be structured for efficient, effective responses to crises

- Identify the role of fatigue in constraining policy decision-making

- Develop organizational procedures for managing uncertainty experienced in crises

- Develop man-machine simulations for identifying how crisis decision-making groups should be structured

D. Training/Preparation Technology Programs

- Develop computer-aided instruction routines for educating users in information technology available during crises

- Develop executive aids for display of information from new technologies

- Design simple, quick exercises to alert key decision-makers to crisis-management capabilities

- Develop and evaluate appropriate strategies for multinational decision-making in crises

- Develop multi-nation simulation exercises to coordinate policy plans across allies

E. Information Handling

- Identify information needed to manage crises

- Develop capability to perceive, interpret, and display in near real time changes in patterns of adversary and third party behavior and responses

- Develop monitoring routines for feedback from crisis decisions and actions

- Test and develop brevity codes for crisis reporting and monitoring between command nodes

- Investigate computer conferencing capabilities for effective exchange of information and rapid agreement on action within the U.S. Government and between allies

Given this list of potential contributions, it remains to specify research efforts worthy of support.

VI. TECHNICAL AREAS OF EFFORT TO YIELD THOSE PRODUCTS

Several areas of research emphasis are envisioned over the next five years. These include:

- Advanced warning and monitoring methodology

- Routines to evalute and optimize alternative organizational designs and procedures

- Analytics for ad hoc, fluid problems

- Formal theories for evaluating crisis options

- Technical support

A. Advanced Warning and Monitoring Methodology

- Filtering techniques to lessen estimating errors

- Pattern recognition in large, multiple measure data sets

- Actuarial tables on countries' potential involvement in crises

- Diagnostics to impute probabilities of crisis recognition and coercive action to important foreign governments.

- Data analysis strategies to map the perception and processing of external events and signals by foreign governments as part of their crisis management behavior.

- Learning models for signal detection in early warning.

B. Routines to Evaluate and Optimize Alternative Organizational Designs and Procedures

- Apply control and other formal theories to analyze trade-offs in security vs. information sharing and in centralization vs. decentralization of responsibility.

- Develop and test a set of human experiments and computer simulations to determine the sensitivity of crisis recognition and management performance to alternative organizational designs and procedures.

- Develop and test computer simulations to optimize crisis management institutions relative to stipulated performance goals, both horizontally and vertically within a geographically dispersed national defense system.

- Adapt heuristic programming techniques to determine de facto decision rules used by persons in crisis management roles.

- Develop the theoretical requirements for different levels of multinational cooperation in crisis management.

- Extract developmental indices and rules of thumb for multinational cooperation in crisis management from contemporary attempts at developing such capabilities in military and non-military issue areas.

- Design alternative prototypes for multi-national coopera-
  tion in crisis management in light of the findings from
  theory and experience (Points 5 and 6 above).

C. Analytics for Ad Hoc, Fluid Problems

- Clarify the applicability of recent work on fuzzy sets.

- Model the implications of alternative information search
  and processing strategies for situations with rapid,
  incremental changes.

- Apply Markov approaches to diagnose lock-in phenomena in
  crisis recognition and coping.

D. Formal Theories for Evaluating Crisis Options

- Develop formalisms for recalculating utilities in rapidly
  evolving situations and for disaggregating utilities to
  the level of specific moves as contrasted with general
  crisis outcomes.

- Develop models for evaluating alternatives and updating
  such alternatives in a manner compatible with the utility
  recalculation capability just mentioned.

E. Technical Support

While ARPA has already supported significant developments of necessary research
support infra-structure, some specific tasks remain to be pursued to enable
the tasks noted above to be conducted efficiently. These involve:

- Specify and develop crisis management data sets
- Provide software support
- Coordinate experimental facilities for human experi-
  ments and computer simulations

PROPOSED TECHNICAL COORDINATION AND INTEGRATION TASKS

I. NEED

Without substantial expenditures of time and energy to meet technical coordination and integration needs, it is difficult to see how a host of independent researchers drawn from disciplines at different stages of technical development and with varying awareness of DoD problems can provide a coherent and relevant set of technical products. We see requirements for constructive, periodic exchanges of views and discussions of technical progress and operational problems among researchers, program managers, and potential users in the national security community. A reasonable probability of effective feedback and eventual adoption of products also seems to require a continuing effort to translate technical work into reports and memoranda which clearly communicate implications for and to users. Again, this seems to call for some performer with the resources and responsibility to perform the coordination and integration tasks which technology transfer requires. At the same time, program planning and coordination must not dilute the authority, information, and control of the responsible ARPA officials. Accordingly, close communication with them is a continuing requirement, one facilitated by proximity.

II. PROPOSED ACTIVITIES

The ARPA crisis management program is a systems development effort no less complex and demanding than that called for by attempts to develop a primarily hardware capability. Accordingly, the management strategy of a designated prime contractor to aid in program planning and technical coordination and integration seems warranted. The prime contractor should:

1. Provide appropriate conference, consultation, and sub-contracting services as the ARPA Project Officer may request.

2. Plan, staff, and conduct periodic technical review meetings where contractors are familiarized with and asked to critique each other's work.

3. Plan, staff, and conduct periodic reviews of crisis management problems and objectives with DoD personnel.

4. Develop by the end of the first year a set of scaled performance measures for evaluating program progress.

5. Prepare periodic state-of-the-art appraisals of relevant technical work being conducted under the auspices of the United States and abroad.

6. Establish a monitoring system for identifying, translating, and disseminating highlights from each task and contract.

7. Prepare and disseminate annually ARPA Crisis Management Program Summaries in two parts: (a) a technical review, and (b) an executive summary.

DATA SET INVENTORY

I. EVENTS DATA

Efforts have been made to identify relevant China-related data sets and to assess their potential utility for the analysis of Chinese crisis behavior. From our perspective, the following considerations are particularly pertinent in the assessment of their utility.

A. Source

1. **Indigenous versus Foreign Sources:** Since events data are only valid to the extent they can measure accurately the target nation's definition of reality, data based on native sources are preferable to data based on foreign sources. The former are more likely to capture the concerns and interpretations of the recipient of event actions.

2. **Single versus Multiple Sources:** Events data can be distorted by the peculiar nature of the audience of the public media on which they are based. Often there might be multiple intended audiences. Therefore, the availability of data based on multiple domestic sources provides a cross-check for determining the extent to which the data reflect the genuine beliefs of the decision-makers (e.g., does the People's Daily reflect the views of the Chinese elite or does it merely represent efforts to manipulate domestic public opinion?). Further, the availability of data based on foreign sources can be compared with data based on domestic sources to determine the presence and nature of perceptual screens and biases characterizing the target nation.

B. Coverage

1. **Temporal Coverage:** Four sets of considerations are germane: a) the length of temporal coverage, b) the continuity of temporal coverage, c) the substantive

interest to us of the periods covered, and d) the temporal units employed in data collection. We prefer extended, continuous coverage to short, sporadic coverage since the former enables us to identify longitudinal patterns and trace feedbacks with long lags. We prefer data coverage for the post-1960 period since major Chinese foreign policy re-orientation took place during that time. And finally, we prefer data coverage on a daily basis so that we can monitor crisis management behavior in rapidly changing contexts.

2. Issue Coverage: The delineation of substantive areas where activities of nations intersect is desirable for differentiating behavioral patterns in different issues and contexts. It helps to answer questions such as "do the Chinese behave the same way when they are dealing with trade problems as when they are dealing with arms control problems?" In the absence of explicit issue codes, the availability of descriptive decks -- from which such codes could be generated -- becomes a relevant concern.

3. Target Coverage: Two aspects of target coverage are of interest to us: a) global versus regional coverage, and b) inclusion versus exclusion of coverage on subnational actors. We prefer projects based on a global orientation because a regional focus makes an a priori assumption that the couplings between certain nation actors are absent or weak or substantively insignificant and can therefore be eliminated from the sample. Further, when explicitly articulated rules for determining the inclusion or exclusion of nation actors in the sample are absent, the availability of attribute data for those nations selected becomes a relevant concern. It helps us to determine the representativeness of the sample in general, and its fit with Chinese target selections in particular. Second, we prefer projects that cover domestic groups and institutions. This kind of data facilitates the analysis of subnational decision processes and the identification of persons or bureaus occupying the role of gate-keepers in these processes -- although we have no illusions about the sufficiency of this kind of data for such analyses except at a very general level.

C. Coding Scheme and Procedures

1. Cross-Project Comparability: Our preference is for projects that are based on more or less similar coding schemes, and hence could be relatively easily converted.

2. Categorical versus Scalar Data: The availability of scaled intensity measures of interactions between nations is desirable for monitoring and predicting states of actor relationships in crisis situations, and movements towards or away from conflict breakpoints. This does not imply categorical data such as action types are not useful. They are useful for different things such as the identification of general patterns of policy instrumentation.

3. Situational Coverage: Data on the target nation's definition of the situational context -- that is, its perception of the other nation's preferences, intentions, capabilities, and its own time frame and capability assessment -- is particularly relevant for analyses of crisis behavior.

4. Coder Reliability: In addition to the conventional assessment of the consistency between and within coders, considerations regarding the ethnicity of the coders is relevant because of the possibility of culture-determined interpretations of foreign policy events. This consideration also applies to the question of appropriateness of using western-based coding schemes to collect and analyze data on non-western cultures.

D. Data Quality on China

1. Continuity of Coverage: As suggested above, extended overtime coverage is desirable for identifying patterns and detecting changes.

2. Size of Data Subset: A large number of events about China is desirable. A small N suggests the presence of a large number of zero-value temporal units, and hence the necessity of aggregating events and collapsing temporal units. This makes the identification of short-time processes impossible (such as when the empirical process in question takes days but only data on monthly intervals are available).

3. Data Variability: Absence of change in data patterns means that we are dealing with constants or near-constants, and hence are of little value to empirical or policy analyses.

4. Data Focus: China as action recipient versus China as action initiator. If the data are biased towards the monitoring of the former aspect rather than the latter aspect, we can infer that they probably reflect concerns relevant to the friends and adversaries of China rather than China itself. The latter kind of information about Chinese actions seems to be more valuable for our interests.

The following is a brief evaluation of the major events data sets that appear to be particularly useful for our purposes.

World Events Interaction Survey

The WEIS data project at the University of Southern California under the direction of Charles McClelland covers the period between January, 1966 and August, 1969. The data for this period are already on tape at the University of Maryland. Particularly valuable features of this data set are: 1) the fairly extensive set of nation actors included in the data set, 2) the relative sufficiency of events which involve China as either initiator or recipient (only the United States and the Soviet Union have significantly more events), and 3) the 1966-1969 period covers two major crisis-type occurrences in recent Chinese history, namely, the Cultural Revolution and the Sino-Soviet conflict. In addition, the availability of the descriptive deck of the textual statements of events (already at Maryland) makes feasible the option of recoding the events data into a new scheme should that prove desirable. The major drawbacks of the WEIS data are the categorical coding scheme employed and the problem of using a single source (primarily the New York Times). At a minimum, the WEIS data should allow us to explore patterns in Chinese behavior in one period of domestic and external crisis. The number of events, however, may be too few to enable us to carry out sophisticated modelling or simulation analysis. The WEIS data through the year 1974 are to be made available to us in the near future.

Comparative Research on the Events of Nations

The CREON project at the Ohio State University under the direction of Charles
Hermann has probably the most complex coding scheme among the major events
data projects. It covers domestic actors, situational variables, national
goals, and resources employed by nations in foreign policy pursuits. It has
also developed ordinal scales to tap the degree of policy specificity, commit-
ment, and affect. From our perspective, these rather unique aspects of CREON
are very attractive. However, the CREON data also have some problems. The
project covers the 1958-68 period on the basis of random sampling of quarters.
This temporal discontinuity in the data set makes the task of identifying lon-
gitudinal patterns difficult, and the task of tracing extended interaction
sequences and feedback loops impossible. Second, its criteria for determining
the inclusion or exclusion of nations in the sample are not clear. We assume
that its sample of 35 nations may not coincide with the patterns and emphases
of Chinese foreign relations. Third, the CREON project relies on Deadline
Data as its sole data source. Past research indicates that there may be
severe source bias in using Deadline Data;[2] it tends to systematically under-
represent the foreign relations activities of the small, non-western nations,
whereas this group constitutes a significant collective target of Chinese for-
eign policies. Therefore, we infer that the CREON data set may be more accu-
rate reflections of western concerns and perceptions than Chinese concerns
and perceptions. Fourth, the data coverage on foreign policy actions ini-
tiated by China appears to be not very extensive. There are only 509 events
falling under this category; the size of this data subset is quite small when
we consider that it refers to a decade of Chinese foreign relations. As sug-
gested earlier, the small N can pose validity problems for statistical analyses.

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[2] See R. Burrowes and B. Spector, "Conflict and Cooperation within and Among
Nations: Enumerative Profiles of Syria, Jordan, and United Arab Republic,
January 1965 to May 1967," paper presented at the International Studies As-
sociation annual meetings, Pittsburgh, April 2-4, 1970; and P.A. McGowan,
"A Bayesian Approach to the Problem of Events Data Validity in Comparative
and International Political Research," in J. Rosenau, ed., Comparative Foreign
Policy.

Dimensionality of Nations

The DON project at the University of Hawaii under the direction of Rudolph
Rummel is based on the New York Times as its data source. It covers only
external conflict behavior of nations for the 1955-57 and 1962-64 periods.
Both the nature of the conflict behavior and the policy instruments used
are coded in nominal categories. The nature of the behavioral measures
employed are relatively crude (e.g., presence or absence of diplomatic rela-
tions, number of official visits).[3] In addition to the behavioral measures,
DON includes attribute data of nations for the years of 1910, 1935, 1950,
1955, 1960, and 1962-68. The temporal discontinuity of the data set should
present a more severe problem for the behavioral data than for the attribute
data (the latter we can assume to be relatively slow-changing). If the quality
of the behavioral set can be improved -- unfortunately, the descriptive deck
for the data set has not been produced -- the DON data can be potentially
useful for the following two reasons. First, the two time periods for which
the behavioral data are available coincide with periods characteristic of
quite distinct Chinese outlooks on foreign relations (the "Bandung Spirit"
period, 1955; the "East Wind Prevails" period, 1957; and the "United Front
of Third World against Soviet-American Hegemony" period, 1962-64), and can
be used to determine and compare possibly different behavior patterns of the
Chinese. Second, the availability of attribute data can be potentially use-
ful for assessing the presence and degree of differentiation in the Chinese
selection of its foreign policy targets.

Conflict and Cooperation in East-West Crises

The CCEWC project at the University of Michigan under the direction of Walter
Corson is impressive because its coding scheme incorporates: 1) resource
areas used in foreign policy actions, 2) sequential identification of inter-
action events, 3) ratio scaling of event intensity, and 4) reports of domestic

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[3] For an example of applying the DON data to China, see Sang-woo Rhee,
"China's Cooperation, Conflict and Interaction Behavior: Viewed from Rummel's
Status Field Theoretic Perspective," in R. Dial, ed., Advancing and Contending
Approaches to the Analysis of Chinese Foreign Relations (1973).

events in China, the United States, and the Soviet Union. The data collected
for CCEWC cover 25 nations, including China, for the 1945-65 period. The ana-
lytical focus of the project is on East-West cold war confrontations; the
Berlin crisis (May - December, 1961) and the Cuban Missile Crisis (August -
December, 1962) in particular have been intensely monitored. These two cases
provide excellent opportunities for studying Chinese foreign policy behavior
in second-order crises. The CCEWC data are however only useful for studying
Chinese relations with the NATO and Warsaw Pact countries. It excludes Afro-
Asian nations to which China gives a great deal of attention in its effort to
mobilize opposition to the super powers.

Conflict and Peace Data Bank

The CCPDAB project at the University of North Carolina under the direction of
Edward Azar has developed events data set for 44 nations over the 1945-69
period. These data are coded according to issue areas and scaled according
to friendly and hostile intensity. Its usefulness to us seems to be limited
due to the fact that COPDAB has a restricted regional focus on the Middle
East. But again, it could provide data on Chinese behavior in second-order
crises (the Arab-Israeli conflicts). COPDAB has the relatively unique dis-
tinction in its reliance on multiple and non-western data sources.

African Foreign Behavior Study

The AFBS project has been developed by Patrick McGowan at the Syracuse
University. Its data source is the African Research Bulletin. The following
factors in combination have significantly reduced the usefulness of the AFBS
data for our research interests: 1) its regional focus, 2) the exclusively
categorical nature of the data, 3) the lack of descriptive deck, and 4) the
paucity of data on China. The data subset on China for the 1965-67 period
has less than 50 events.

The above abbreviated survey of the existing events data sources suggest that:

1. Exclusive reliance on western source materials for most of these projects, and hence the danger of the data reflecting more of the western definition of reality than the Chinese definition of reality.

2. Data coverage tends to be generally discontinuous and/or limited in temporal span.

3. Issue coverage of events is generally absent.

4. Target coverage usually includes China, but is probably not useful for revealing Chinese selection of its policy targets or its attention focus on salient actors because of the source bias problem mentioned above.

5. Coding schemes are generally based on the WEIS conceptual and data categories, and are therefore susceptible to cross-project conversions.

6. Situational coverage is with one exception not included in the coding schemes.

7. Events coverage on actions initiated by China, and to a lesser extent, actions received by China, is poor.

8. The nature of data codification is generally categorical rather than scalar.

9. The coverage for subnational actors is generally absent.

II. NON-EVENTS DATA SOURCES

In addition to the above major events data projects, a number of other data sources that are potentially useful for studying Chinese crisis behavior have been reviewed. They consist of the following.

Computer-Aided System for Handling Information on Local Conflicts

The CASCON project (version II) at the Massachusetts Institute of Technology
under the directions of Lincoln Bloomfield and Robert Beattie has collected
information on the attributes of 52 past conflicts involving small powers.
Among the 52 cases, two involve China directly: the Sino-Indian conflict
(1954-62) and the Quemoy-Matsu crisis (1954-58). Experts are asked to specify
1) the presence or absence, 2) the direction of impact, and 3) the degree of
impact of 482 factors (some of which represent possible policy manipulables)
that influence conflict escalation and de-escalation. These factors are dis-
tributed among five different conflict phases. The usefulness of CASCON for
our research purposes is somewhat limited because 1) the relatively crude
measures (9-point scales) used to code the conflict factors, 2) the absence
of fine-grain longitudinal data to monitor changes in conflict states (in
some cases the conflicts spanned over several years and are only demarcated
into five or fewer phases), and 3) the presence of only two cases to compare
and generalize about Chinese conflict behavior.

Computer-Aided Conflict Information System

The CACIS project at the University of Michigan under the direction of Raymond
Tanter shares the conflict management interest of CASCON. It intended to ex-
pand the CASCON sample to cover conflicts between major powers, and to intro-
duce multiple models to simulate conflict behavior. Some preliminary results
on the Berlin Crisis using the CCEWC data have appeared.[4] We find little in-
formation helpful for China analysis from this project.

Ann Arbor Content Analysis Project

The content analysis project at the University of Michigan under the directions
of Kuang-sheng Liao and Allen S. Whiting, judged from one readily available

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[4] Raymond Tanter, Modelling and Managing International Conflicts: The Berlin
Crises, Sage Library of Social Research, Volume 6 (1974).

article,[5] is based on rather crude measures of 1) space, 2) location, and 3) perceived or suggested threat of news items about the United States and India that appeared in the People's Daily during the January 1 - October 20, 1962 period. The content analytic measure of perceived threat is based on the grouping of news item headlines into nine generic theme categories, and the rank-ordering of these. The sample includes 183 news items about the United States and 93 for India. Apparently, data on the Soviet Union have also been collected but they were not reported. A recent publication of a larger study from which the article was drawn is on order and will be reviewed. Attempts to contact the authors for clarifications about the scope, progress, and data availability of this project are continuing.

Berkeley Content Analysis Project

Investigation to date suggests that the premature (or perhaps, timely) demise of the Berkely Content Analysis Project precludes its availability for analysis. Initiated in the late 1960's, the project produced two articles dealing with preliminary coding efforts,[6] but the promised project which was to be developed later has yet to be located. Personal communication with the staff of the Survey Research Center at the University of California at Berkeley (the institution identified in the articles with the project) elicited the response that no such data set existed at the Survey Research Center. The librarian at that institution suggested that perhaps the project failed to secure further funding. Data provided in the initial reports suggest that, if available, these content analytic measures could provide us with some data on the level of media attention to various nations and, in addition, some measure of positive or negative affect toward them. Such data might possibly be useful in terms of providing some basis for comparison with the PAMIS FMA data to be described later.

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[5] Kuang-sheng Liao and Allen S. Whiting, "Chinese Press Perceptions of Threat: The U.S. and India, 1962," China Quarterly, No. 53 (1973), pp. 80-97.

[6] Paul Wong, "Coding and Analysis of Documentary Materials from Communist China," Asian Survey, Volume 7, No. 3 (March 1967), pp. 198-211; and "Storage and Retrieval of Data on Communist China," Asian Survey, Volume 8, No. 5 (May 1968), pp. 378-383.

Van Ness Research Effort

Research being carried out by Peter Van Ness at the University of Denver on Chinese interstate behavior is currently involved in getting data of the following kinds:

1. Foreign aid (by China)

2. Treaties

3. Diplomatic relations

4. Official visits

5. Trade

6. Chinese policy statements (including statements of support for revolution and statements on aid policy)

7. Military intervention; and

8. Military conflict

These data sets are currently being gathered and organized and their availability in the near future is unlikely.

Trade Data

The Office of Economic Research of the Central Intelligence Agency has issued annually since 1950 a research aid entitled, People's Republic of China: International Trade Handbook. This volume provides data on: balance of trade (total, communist countries, and non-communist countries); trade by area and country (exports, imports, and balance); major trading partners; commodity composition of trade (commodity as percentage of exports, imports);

commodity composition of imports (commodity monetary value by communist countries, non-communist countries); commodity composition of exports (commodity monetary value by communist countries, non-communist countries); commodity composition of trade with non-communist countries (commodity value by Japan, Western Europe, West Germany, United Kingdom, France, Italy, Canada, Australia, Hong Kong, and Macao, less developed countries); imports of grain and chemical fertilizer (tons and monetary value); and contracts for whole plants (nation/firm, type, value, date contract signed, date completion, financing).[7] Inevitably, such data are less reliable for transactions involving less developed countries and communist countries.[8] This data set can provide us with patterns of interaction between China and a small subset of countries which can be analyzed to detect major shifts of discontinuities. Further, the data on commodity trade (both imports and exports) and on "whole plant" imports can provide us with some gross indicators of Chinese behavior with regard to a set of key resources (i.e, foodstuffs, energy resources, and technology) which are perceived as potential "crisis" sectors by a number of political actors. Efforts are underway to access this data.

Psychological Operations Automated Management System (PAMIS) Foreign Media Analysis (FMA) Subsystem

PAMIS FMA provides the major collection of content analytic data on the Chinese media. Coverage consists of the following periodicals and radio broadcasts: Jenmin Jihpao (People's Daily), Hung Ch'i (Red Flag), Peking Review, China Pictorial, China Reconstructs, Radio Peking Foreign Service (English, one hour daily), and Radio Peking Domestic Service (Mandarin, 1200 GMT News and Press Review and 2230 GMT News and Press Review). The periodicals are covered from January 1, 1972 through March 31, 1974; the radio broadcasts from January 1, 1972 through April 30, 1974. For each article or broadcast, coders determine the subject country, the subject (topic), and the tone (favorable,

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[7] People's Republic of China: International Trade Handbook. Research Aid. Central Intelligence Agency, A73-29, October 1973.

[8] Ibid., p. 12, footnotes to Tables 6 and 7.

neutral, or unfavorable) of the item as it relates to the subject country's authorities. The listing of subjects (or themes) is fairly extensive (over 600 in number) and summary measures of subjects (weighted by the amount of time or space that they are accorded) are developed. These data at least should provide us with some measures of attention to various countries and some gross measures of affect toward these countries. Assessment of the utility of the extensive subject coding awaits detailed examination of these codes and some scanning of the patterns that they exhibit over time. Efforts are now underway to obtain the relevant codebooks, the data itself (on tape) and analyses of the data which have already been made.

Foreign Broadcasting Information Service

Contacts have been made to acquire the FBIS materials on China, and to determine its quality. On a selective basis, Chinese radio broadcasts are stored on tape. These data are also accompanied with some thematic codes. The latter feature should help the speedy sorting of the relevant materials. We have however yet to determine 1) the appropriateness of the thematic codes applied by the FBIS, 2) the criteria of selecting materials to be put on tape, and 3) the "validity" of these materials.[9]

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[9] It would be difficult for us to cope with one aspect of this data validity problem; Marchetti and Marks remarked: "... even though the FBIS editors are members of the CIA's Intelligence Directorate, the operators in the Clandestine Services are reluctant to reveal their propaganda operations to them. As a result, for its Far East daily report the FBIS frequently monitored and distributed the texts of programs actually originating from the agency's secret stations on Taiwan along with the transcripts of broadcasts from real counter-revolutionary organizations on the mainland." Victor Marchetti and John D. Marks, The CIA and the Cult of Intelligence (1974), p. 168.

INTENSIVE EVENTS DATA 1963-1965

In view of the deficiencies of the events data sources reviewed in Appendix C, we are fortunate to have available the following intensive events data set:

1. People's Daily is used as the events data source.

2. Continuous monitoring is done on a daily basis for a three-year period from January 1, 1963 to December 31, 1965.

3. Issue categories and resource categories of Chinese interactions with other nations are included in addition to action categories.

4. The coding scheme employs both the revised WEIS categories and the revised Corson intensity scales; the revisions include a significant number of additions to action categories and intensity scales in order to capture the more unique elements of Chinese foreign policy behavior (for example, the common usage of people's organizations and mass demonstrations as an instrument in foreign policy).

5. Domestic actors in China, both policy institutions and individual policy makers, are identified and coded when the information is available.

6. Chinese references to past experiences as analogies for current problems are included for analyses of the constancy or variability of Chinese foreign policy calculus elements (for example, references to the Korean war in the

context of the escalating Vietnam conflict in 1965; references to the hardships of Long March in statements emphasizing the virtues of self-reliance in industrialization).
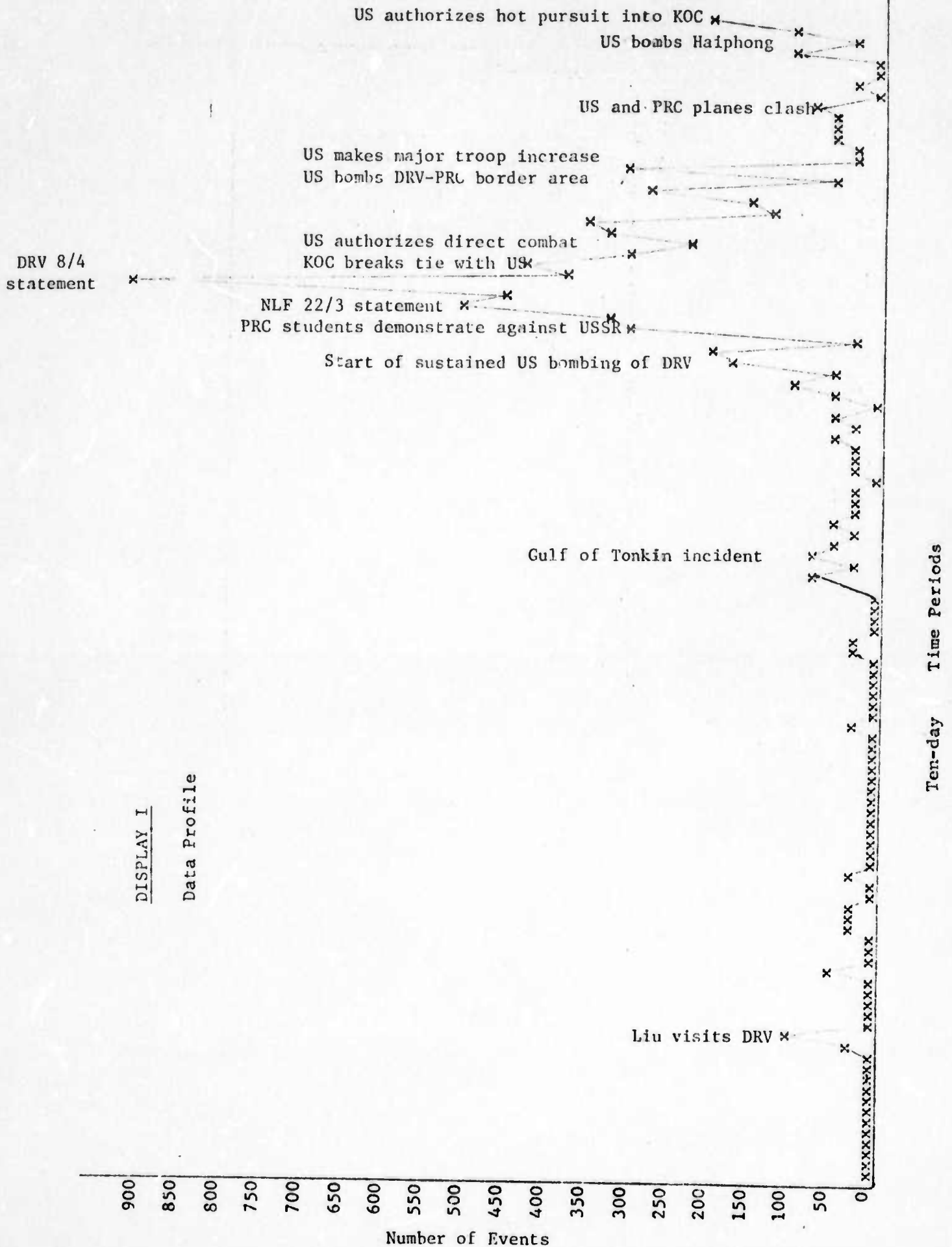
7. Chinese declarations of its own policy preferences and intentions, and its perceptions of its own policy actions and capabilities are scaled.

8. Chinese evaluations of other actors' actions, preferences, intentions, and capabilities are scaled.

9. As best as we could, the time frames of Chinese policy statements are coded according to distances from the present into either the past or the future for all those elements mentioned in 6, 7, and 8 above.

10. In order to key the data collection effort to some policy problem of significance to the Chinese -- rather than the common approach to events data collection which does not focus on any particular policy problems -- the Vietnam conflict is chosen as a topic focus; any references to that conflict are included in the data sample.

11. Operating on the assumption that the location of events reports in the People's Daily has significance in the relative importance of these events to the Chinese leadership, data are collected for all the Vietnam-related reports that appeared on the front page of the paper.

12. In order to provide a cross-check to the validity of the Chinese data we have collected, quantitative events data based on the New York Times Index for the same time period are collected for comparison purposes. Further, an impressionistic survey of news reports in the London Times and

Le Monde is conducted to determine if there are any significant differences in the types of events being reported by these sources.

13. In order to further verify the validity of our data set based on the People's Daily, discussions and reports in the Red Flag and the People's Liberation Army Daily are surveyed to provide a cross-check.

On the basis of the above data selection and codification procedures, 7726 events related to the Vietnam conflict have been collected for the period between January 1, 1963 and December 31, 1965. Display I provides an over-time profile of the data set. Displays II and III provide the data coding format and its structure respectively. The overall quality of the data is quite good. There are, however, two areas where our data are inadequate: 1) the relative paucity of data for all the conflict participants in the Vietnam conflict before August 1964, and 2) the relative paucity of data for the Soviet Union throughout the entire time period covered.

The comparison of events reported in the People's Daily with those in western press sources suggested there is overall fit in the kinds of events being reported. At the same time, it showed that there is congruence among the Chinese press sources in event coverage and interpretation. The comparison further revealed that there are substantial differences in the evaluation of the nature of events between the People's Daily and the New York Times, and substantial overtime variations in the Chinese assessment of the conflict situation as to make further empirical analyses both interesting and worth-while.

US authorizes hot pursuit into KOC ✗

US bombs Haiphong

US and PRC planes clash ✗

US makes major troop increase
US bombs DRV-PRC border area

US authorizes direct combat
KOC breaks tie with US ✗

DRV 8/4
statement

NLF 22/3 statement ✗
PRC students demonstrate against USSR ✗

Start of sustained US bombing of DRV ✗

Gulf of Tonkin incident

Liu visits DRV ✗

Ten-day   Time Periods

DISPLAY I

Data Profile

900 850 800 750 700 650 600 550 500 450 400 350 300 250 200 150 100 50 0

Number of Events

D-4

DATA RECORDING SHEET

I. Datum Identification No.:
   Date of Report: /   /19
   Date of Occurrence: /   /19
   Datum Code: A. Action -- a1. discrete   a2. continuous
                            b1. verbal   b2. non-verbal
                            c1. conflict   c2. cooperation

            B. Evaluation -- 1. action   (nation:)
                             2. desire   (nation:)
                             3. intent   (nation:)
                             4. capability (nation:)

II. Actor:- a. nation:
             b. institution:
             c. person:

    Direct Target:- a. nation:
                     b. institution:
                     c. person:

    Indirect Target:- a. nation:
                       b. institution:
                       c. person:

III. Action Code:
     Actor-Direct Target:- a. action category:
                            b. issue category:
                            c. resource category:
                            d. action scale:
                            e. action duration: from   /   /19   to   /   /19

     Direct Target-Indirect Target:-
                            a. action category:
                            b. issue category:
                            c. resource category:
                            d. action scale:
                            e. action duration: from   /   /19   to   /   /19

IV. Evaluation Code:
    1. hostility scale (action):   (time horizon:)
    2. intensity scale (desire):   (time horizon:)
    3. hostility scale (intent):   (time horizon:)
    4. strength scale (capability):   (time horizon:)

V. Description of Action or Evaluation:

DISPLAY III

DATA STRUCTURE

PEOPLE'S DAILY

REPORTS ON OTHERS	**EVALUATIONS**	Capability	Intent	Resource Categories	Time Horizon	Strength Scale
			Intent	Action Categories	Time Horizon	Hostility Scale
			Desire	Issue Categories	Time Horizon	Intensity Scale
	ACTIONS	Non-Verbal		Resource Categories		Conflict Scale
				Issue Categories		
				Action Categories		
		Verbal		Resource Categories		Conflict Scale
				Issue Categories		
				Action Categories		
REPORTS ON SELF	**EVALUATIONS**	Capability		Resource Categories	Time Horizon	Strength Scale
		Intent		Action Categories	Time Horizon	Hostility Scale
		Desire		Issue Categories	Time Horizon	Intensity Scale
	ACTIONS	Non-Verbal		Resource Categories		Conflict Scale
				Issue Categories		
				Action Categories		
		Verbal		Resource Categories		Conflict Scale
				Issue Categories		
				Action Categories		

CHINESE PERCEPTIONS OF POLITICAL SYMBOLS

On the basis of field research carried out in Hong Kong, a rich data set on Chinese perceptions of political symbols and their use of political language has been obtained. These data have been gathered using the Associative Group Analysis technique,[10] subject to certain modifications and refinements. Data collection was _not_ done with U.S. Government support.

First, there was an effort to select stimulus words used in the association tests which would be relevant for China-related crisis management problems -- in particular, the identification of:

1. Cardinal goals and values of the PRC regime;

2. Perceptions of the external world (including threats to goals and relevant opportunities); and

3. Patterns of reasoning and information sources used in crisis-type decisional contexts.

The AGA data was gathered with the intent of providing analysis complementary to standard content analytic assessment by providing rules to the "decoding" of public statements (Presumably, such analysis could be used to aid the "encoding" of appropriate messages as well). Thus, particularly prominent in the list of stimulus words (Display IV) are items on national images (e.g., "Japan" and the "Soviet Union"), terms used in the analysis of national security issues (e.g., "crisis" and "threat"), terminology used in labelling "significant others" in the interstate system (e.g., "enemy" and "friendly nation"), and terms dealing with presumably key values promoted by the political elite (e.g., "struggle" and "revolution").

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[10] L.B. Szalay, W.T. Moon, D.A. Lysne, and J.A. Bryson, A Lexicon of Selected U.S. - Korean Communication Themes (Kensington, Maryland: American Institutes for Research, 1971).

Second, the procedures used in administering AGA tests had to be modified in coping with the particular population involved. Because of scheduling problems and interviewee reticence, testing was done either with individuals or in small groups of two or three rather than the groups of 50 or more that AGA usually involves. Further, since the Chinese language does not have a term exactly correspondent to the English language concept of "word," subjects were asked to respond with single "concepts" or "phrases." Prior to beginning on actual test items, respondents were given a couple of "practice" stimuli to insure that the instructions were understood.

Altogether, data was gathered on some 60 former PRC residents, a number in excess of the group of 50 that the AGA technique normally uses as a basis for analysis. In conjunction with the AGA testing, the former PRC residents were also asked to provide some information on themselves (Display V). These data on background characteristics should be a significant aid in the analysis of the results -- in controlling for sources of possible "contamination" (i.e., from the length of time they have spent in Hong Kong) and for identifying the sources of certain sets of perceptions (e.g., the effects of education or media attentiveness).

In addition to the data on former PRC citizens, comparable data was gathered from Hong Kong residents. These data from the Hong Kong residents will be used for the following purposes: (1) to provide some comparison data in order to assess the role of cultural factors in responses; (2) to provide comparison data in order to assess the impact of socialization efforts in the PRC on the perception of various political symbols; and (3) to provide test-retest data that can be used to determine the appropriate weighting of individual responses. With regard to (3), previous AGA assessments have been based exclusively on U.S. test-retest data to provide these weightings; such a procedure may be inappropriate.

These AGA data sets are currently being analyzed and the results at this stage look very promising. Preliminary findings on Chinese images of the Soviet Union and Taiwan are suggestive in this regard. As can be seen from Display VI,

the Soviet Union is seen largely in threatening terms -- as being "revisionist," "social imperialist," "ambitious," and "aggressive." Insofar as the Soviet Union is also seen as being a powerful state (e.g., "industrialized," "great power," and "superpower"), this suggests that the Soviet Union is perceived as a key threat to Chinese core values and goals.

Taiwan, on the other hand, would seem to represent one of the key goal objects of the regime. The AGA results in Display VI are fairly striking in the uniformity of the pattern of response. Taiwan is seen as being economically valuable ("abundant resources" and "fertile land"), but, even more significant, it is seen as being indisputably a part of China ("China's territory," "Taiwan province," "should unite," and "should liberate").

Further analysis of these AGA data sets will help to identify these key areas of Chinese goals and values, perceptions of the external world, and patterns of reasoning employed in decisional contexts. In regard to this last point, one pattern that appears to be emerging across perceptions of different symbols is the tendency for PRC citizens to think in social science analytic terms such as "systems," "institutions," and "lines."

DISPLAY IV

ITEMS IN WORD ASSOCIATION TESTS

United States	conservatism	President Ford
Soviet Union	liberalism	Nixon
China	democracy	president
Japan	revolution	chairman
Taiwan	struggle	political party
India	comrade	army
war	class	election
peace	authority	nation
imperialism	contradiction	government
enemy	disorder	Congress
friendly nation	mass line	cadre
crisis	the people	commune
threat	red and expert	policy
fear	constitution	family
goal	crime	school
desire	justice	work
politics	freedom	me
socialism	equality	friend
communism	Mao Tse-tung	economic development
capitalism	Liu Shao-ch'i	

DISPLAY V

BACKGROUND INFORMATION ON FORMER PRC RESIDENTS

1. Sex

2. Place in mainland China where they lived
    - City
    - Town
    - Country

3. Province in which they lived

4. Age

5. Occupation

6. When they came to Hong Kong

7. Level of education

8. Reason for coming to Hong Kong

9. If they were "overseas Chinese," what year they entered China

10. Family classification (class background)

11. Frequency of attentiveness to the media
    a. government radio
    b. Hong Kong radio
    c. read newspapers and magazines
    d. watch movies
    e. participate in political activities

12. Confidence in the reliability of newspapers and magazines

13. Organizational affiliations
    a. communist party
    b. youth league
    c. young pioneers
    d. red guards
    e. others

14. Level of political activism

15. Attitude toward mainland government

CHINESE IMAGES OF TAIWAN AND THE SOVIET UNION[*]

	Taiwan	Soviet Union
Economic Characteristics	"abundant resources" "fertile land" (agricultural products)	"developed" "industrialized" (stress on science and technology)
Internal Political Characteristics	(seldom mentioned)	"revisionist" "political oppression" "socialist" (seldom mentioned
International Role	"China's territory" "Taiwan province" "should unite" "should liberate"	"great power" "superpower" "social imperialist" "aggressive" "ambitious"

[*] Based on a preliminary analysis of the data only.